



Software Engineering Institute

Carnegie Mellon

SGMM

Smart Grid Maturity Model

Empower your Smart Grid Transformation

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10 March 2011

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SATURN 2011

Seventh Annual SEI Architecture
Technology User Network Conference

Architecting the Future



May 16-20, 2011 | San Mateo County, California



The SEI Architecture Technology User Network (SATURN) Conference brings together experts to exchange best architecture-centric practices in developing, acquiring, and maintaining software-reliant systems.

www.sei.cmu.edu/saturn/2011

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Model-Driven Architecting



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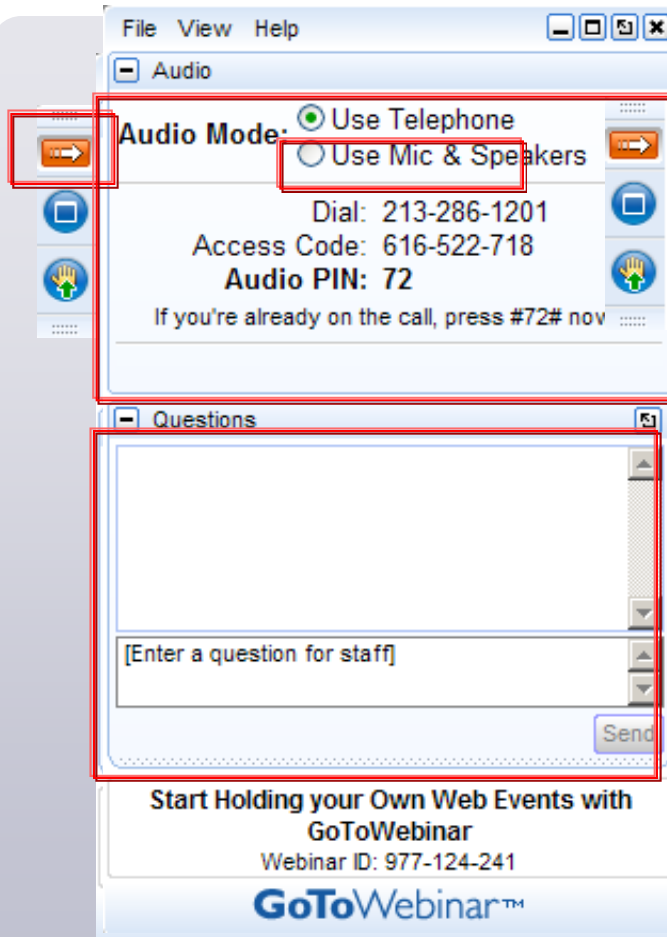


SEI Launches New Technology Blog

With posts written by staff members, the blog will provide the SEI audience with insights into the broad spectrum of work at the SEI via a two-way, read-write medium.

<http://blog.sei.cmu.edu/>

How to Participate Today



Open and close your Panel
View, Select, and Test your audio

Submit text questions

Q&A addressed at the end of
today's session

About the Speaker



David White is a member of the Resilient Enterprise Management (REM) team in the CERT Program at the Carnegie Mellon's Software Engineering Institute (SEI). The REM team performs research and development in the areas of operational resilience, critical infrastructure protection, and smart grid deployment.

David is the project manager and a core development team member for the SEI Smart Grid Maturity Model (SGMM), a business tool to assist utilities with planning and tracking progress of their grid modernization efforts.

David is also a core development team member for the CERT[®] Resilience Management Model (CERT-RMM), a process improvement model for managing security, business continuity, and IT operations.

David works from his home in New York City.

Polling Question #1

How did you hear about today's webinar?

- a) DistribuTECH 2011 (conference or email)
- b) Social Media (Twitter, LinkedIn)
- c) Email Invitation from the SEI
- d) SEI Website or Press Release
- e) Online Webinar Calendar (i.e. webinarlistings.com/)

A major power grid transformation is underway.

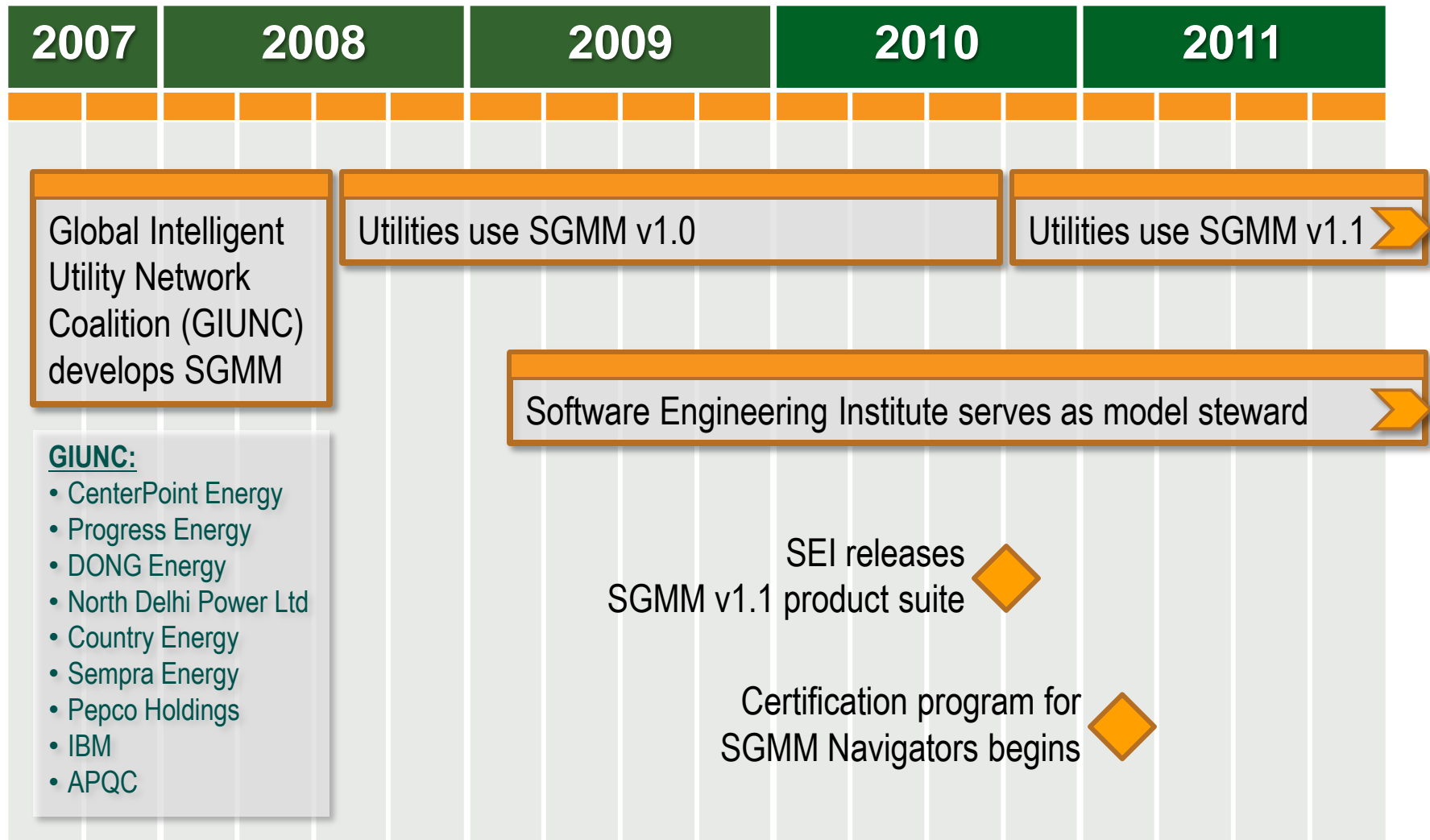
How can utilities

- Develop effective roadmaps?
- Track progress?
- Understand their posture in comparison to peers?



SGMM was developed to address these concerns

SGMM History



Developed by utilities for utilities




Polling Question #2


How did you learn about SGMM?

- a) From using the model
- b) Website
- c) Conference or event
- d) This webinar announcement
- e) Other

What Is the Smart Grid Maturity Model?



SGMM is a
MANAGEMENT TOOL
that provides a
COMMON FRAMEWORK
for defining key elements of
SMART GRID TRANSFORMATION
and helps utilities develop a
PROGRAMMATIC APPROACH
and track their progress.



How Is the SGMM Used?

SGMM is used to help organizations

- Identify where they are on the smart grid landscape
- Develop a shared smart grid vision and roadmap
- Communicate using a common language
- Prioritize options and support decision making
- Compare to themselves and the community
- Measure their progress
- Prepare for and facilitate change



SGMM at a Glance

8 Domains: Logical groupings of smart grid related capabilities and characteristics

	SMR	OS	GO	WAM	TECH	CUST	VCI	SE
5 PIONEERING	<ul style="list-style-type: none"> Creation of new services and product offerings. Grid business activities provide sufficient financial resources to enable continued investment in smart grid sustainment and innovation. Business model opportunities emerge as a result of smart grid capabilities and are implemented. 	<ul style="list-style-type: none"> Stakeholders to optimize overall grid operation and health. The organization is able to readily adapt to support new ventures, products, and services that emerge as a result of smart grid. Channels are in place to harvest ideas, develop them, and reward those who help shape future advances in process, workforce competencies, and technology. 	<ul style="list-style-type: none"> 2 System-wide, analytics-based, and automated grid decision making is in place. 	<ul style="list-style-type: none"> 1 Automated with processes defined and executed across the supply chain. 2 Assets are leveraged to maximize utilization, including just-in-time asset retirement, based on smart grid data and systems. 	<ul style="list-style-type: none"> 2 The enterprise information infrastructure can automatically identify, mitigate, and recover from cyber incidents. 	<ul style="list-style-type: none"> 2 There is automatic outage detection at premise or device level. 3 Plug-and-play, customer-based generation is supported. 4 Security and privacy for all customer data is assured. 5 The organization plays a leadership role in industry-wide information sharing and standards development efforts for smart grid. 	<ul style="list-style-type: none"> 2 Resources are adequately dispatchable and controllable so that the organization can take advantage of granular market options. 3 The organization's automated control and resource optimization schemes consider and support regional and/or national grid optimization. 	<ul style="list-style-type: none"> 2 Customers control their energy-based environmental footprints through automatic optimization of their end-to-end energy supply and usage level (energy source and mix). 3 The organization is a leader in developing and promoting industry-wide resilience best practices and/or technologies for protection of the national critical infrastructure.
4 OPTIMIZING	<ul style="list-style-type: none"> Grid vision and strategy drive the organization's strategy and the grid is a core competency throughout the organization. Grid strategy is shared and revised collaboratively with all stakeholders. 	<ul style="list-style-type: none"> 1 Management systems and organizational structure are capable of taking advantage of the increased visibility and control provided through smart grid. 2 There is end-to-end grid observability that can be leveraged by internal and external stakeholders. 3 Decision making occurs at the closest point of need as a result of an efficient organizational structure and the increased availability of information due to smart grid. 	<ul style="list-style-type: none"> 1 Operational data from smart grid deployments is being used to optimize processes across the organization. 2 Grid operational management is based on near real-time data. 3 Operational forecasts are based on data gathered through smart grid. 4 Grid operations information has been made available across functions and LOBs. 5 There is automated decision-making within protection schemes that is based on wide-area monitoring. 	<ul style="list-style-type: none"> 1 A complete view of assets based on status, connectivity, and proximity is available to the organization. 2 Asset models are based on real performance and monitoring data. 3 Performance and usage of assets is optimized across the asset fleet and across asset classes. 4 Service life for key grid components is managed through condition-based and predictive maintenance, and is based on real and current asset data. 	<ul style="list-style-type: none"> 1 Data flows end-to-end from customer to generation. 2 Business processes are optimized by leveraging the enterprise IT architecture. 3 Systems have sufficient wide-area situational awareness to enable real-time monitoring and control for complex events. 4 Predictive modeling and near real-time simulation are used to optimize support processes. 5 Performance is improved through sophisticated systems that are informed by smart grid data. 6 Security strategy and tactics continually evolve based on changes in the enterprise IT architecture. 	<ul style="list-style-type: none"> 1 Support is provided to customers to help analyze and compare usage against all available pricing programs. 2 There is outage detection and proactive notification at the circuit level. 3 Customers have access to near real-time data on their own usage. 4 Residential customers participate in demand response and/or utility-managed remote load control programs. 5 Automatic response to pricing signals for devices within the customer's premise is supported. 6 In-home net billing programs are enabled. 7 A common customer experience has been integrated. 	<ul style="list-style-type: none"> 1 Energy resources (including Volt/VAR, DG, and DER) are dispatchable and tradable. 2 Portfolio optimization models that encompass available resources and real-time markets are implemented. 3 Secure two-way communications with Home Area Networks (HANs) are available. 4 Visibility and potential control of customers' large-demand appliances to balance demand and supply is available. 	<ul style="list-style-type: none"> 1 The organization collaborates with external stakeholders to address environmental and societal issues. 2 A public environmental and societal scorecard is maintained. 3 Programs are in place to shape peak demand. 4 End-user energy usage and devices are actively managed through the utility's network. 5 The organization fulfills its critical infrastructure assurance goals for resiliency, and contributes to those of the region and the nation.
3 INTEGRATING	<ul style="list-style-type: none"> Smart grid vision, strategy, and business case are incorporated into the vision and strategy. Smart grid governance model is established. Smart grid leaders with explicit authority across functions and lines of business are designated to ensure effective implementation of smart grid strategy. Smart grid authorities for smart grid investments have been established. 	<ul style="list-style-type: none"> 1 The smart grid vision and strategy are driving organizational change. 2 Smart grid measures are incorporated into the measurement system. 3 Performance and compensation are linked to smart grid success. 4 Leadership is consistent in communication and actions regarding smart grid. 5 A metrics or oversight process is in place. 6 Education and training is underway. 	<ul style="list-style-type: none"> 1 Smart grid information is available across systems and organizational functions. 2 Control analytics have been implemented and are used to improve cross-LOB decision-making. 3 Grid operations planning is now fact-based using grid data made available by smart grid capabilities. 	<ul style="list-style-type: none"> 1 Performance, trend analysis, and event audit data are available for organizational functions. 2 CBM programs for key components are in place. 3 Remote asset monitoring capabilities are integrated with asset management. 4 Integration of remote asset monitoring with mobile workforce is underway. 	<ul style="list-style-type: none"> 1 Smart grid-impacted business processes are aligned with the enterprise IT architecture across LOBs. 2 Systems adhere to an enterprise IT architectural framework for smart grid. 3 Smart grid-specific technology has been implemented to improve cross-LOB performance. 	<ul style="list-style-type: none"> 1 The organization tailors programs to customer segments. 2 Two-way meter communication has been deployed. 3 A remote connect/disconnect capability is deployed. 4 Demand response and/or remote load control is available to customers. 5 There is automatic outage detection at the substation level. 6 Residential customers have on-demand access to daily usage data. 	<ul style="list-style-type: none"> 1 An integrated resource plan is in place and includes new targeted resources and technologies. 2 Customer premise energy management solutions with market and usage information are enabled. 3 Additional resources are available and deployed to provide substitutes for market products to support reliability or other objectives. 	<ul style="list-style-type: none"> 1 Performance of societal and environmental programs are measured and effectiveness is demonstrated. 2 Segmented and tailored information that includes environmental and societal benefits and costs is available to customers. 3 Programs to encourage off-peak usage by customers are in place. 4 The organization regularly reports on the sustainability and the societal and environmental impacts of its smart grid programs and technologies.
2 ENABLING	<ul style="list-style-type: none"> Smart grid strategy and a business plan are approved by the organization. Smart grid vision is accepted across the organization. Smart grid investment is explicitly aligned to the smart grid strategy. Smart grid resources are established specifically for funding the implementation of smart grid vision. Smart grid implementation is in collaboration with regulators and other stakeholders. Smart grid funding for conducting proof-of-concept projects is in place and aligned. 	<ul style="list-style-type: none"> 1 A new vision for smart grid is prioritized like other strategic initiatives in smart grid vision. 2 The organization's smart grid implementation and deployment teams include participants from all functions and LOBs that the deployment will impact. 3 Education and training to develop smart grid competencies have been identified and are available. 4 The linking of performance and compensation plans to achieve smart grid milestones is in progress. 	<ul style="list-style-type: none"> 3 Aside from SCADA, piloting of remote asset monitoring of key grid assets to support manual decision making is underway. 4 Investment in and expansion of data communications networks in support of grid operations is underway. 	<ul style="list-style-type: none"> 1 Status, and interconnectivity (visibility) has been developed. 3 An organization-wide mobile workforce strategy is in development. 	<ul style="list-style-type: none"> 3 Standards are selected to support the smart grid strategy within the enterprise IT architecture. 4 A common technology evaluation and selection process is applied for all smart grid activities. 5 There is a data communications strategy for the grid. 6 Pilots based on connectivity to distributed IEDs are underway. 7 Security is built into all smart grid initiatives from the outset. 	<ul style="list-style-type: none"> 3 The organization is modeling the reliability of grid equipment. 4 Remote connect/disconnect is being piloted for residential customers. 5 The impact on the customer of new services and delivery processes is being assessed. 6 Security and privacy requirements for customer protection are specified for smart grid-related pilot projects and RFPs. 	<ul style="list-style-type: none"> 3 Pilots to support a diverse resource portfolio have been conducted. 4 Secure interactions have been piloted with an expanded portfolio of value chain partners. 	<ul style="list-style-type: none"> 1 Smart-grid strategies and work plans address societal and environmental issues. 2 Energy efficiency programs for customers have been established. 3 The organization considers a "triple bottom line" view when making decisions. 4 Environmental proof-of-concept projects are underway that demonstrate smart grid benefits. 5 Increasingly granular and more frequent consumption information is available to customers.
1 INITIATING	<ul style="list-style-type: none"> Smart grid vision and strategy are developed. Smart grid implementation is in progress. Smart grid funding for conducting proof-of-concept projects is in place. 	<ul style="list-style-type: none"> 1 The organization has articulated its need to build smart grid competencies in its workforce. 2 Leadership has demonstrated a commitment to change the organization in support of achieving smart grid. 3 Smart grid implementation is in progress. 	<ul style="list-style-type: none"> 1 Business cases for new equipment and systems related to smart grid are approved. 2 New sensors, switches, and communications technologies are evaluated for grid monitoring and control. 3 Proof-of-concept projects and component testing for grid monitoring and control are underway. 4 Outage and distribution management systems linked to substation automation are being explored and evaluated. 5 Safety and security (physical and cyber) requirements are in place. 	<ul style="list-style-type: none"> 1 Enhancements to work and asset management have been built into approved business cases. 2 Potential uses of remote asset monitoring are being evaluated. 3 Asset and workforce management equipment and systems are being evaluated for their potential alignment to the smart grid vision. 	<ul style="list-style-type: none"> 1 An enterprise IT architecture exists or is under development. 2 Existing or proposed IT architectures have been evaluated for quality attributes that support smart grid applications. 3 A change control process is used for applications and IT infrastructure. 4 Opportunities are identified to use technology to improve departmental performance. 5 There is a process to evaluate and select technologies in alignment with smart grid vision and strategies. 	<ul style="list-style-type: none"> 1 Research is being conducted on how to use smart grid technologies to enhance the customer's experience, benefits, and participation. 2 Security and privacy implications of smart grid are being investigated. 3 A vision of the future grid is being communicated to customers. 4 The utility consults with public utility commissions and/or other government organizations concerning the impact on customers. 	<ul style="list-style-type: none"> 1 Assets and programs necessary to facilitate load management are identified. 2 Distributed generation sources and the capabilities needed to support them are identified. 3 Energy storage options and the capabilities needed to support them are identified. 4 There is a strategy for creating and managing a diverse resource portfolio. 5 Security requirements to enable interaction with an expanded portfolio of value chain partners have been identified. 	<ul style="list-style-type: none"> 1 The smart grid strategy addresses the organization's role in societal and environmental issues. 2 The environmental benefits of the smart grid vision and strategy are publicly promoted. 3 Environmental compliance performance records are available for public inspection. 4 The smart grid vision or strategy specifies the organization's role in protecting the nation's critical infrastructure.
0 DEFAULT								

175 Characteristics: Features you would expect to see at each stage of the smart grid journey

6 Maturity Levels: Defined sets of characteristics and outcomes



The Smart Grid Maturity Model – Levels

PIONEERING

5

Breaking new ground; industry-leading innovation

OPTIMIZING

4

Optimizing smart grid to benefit entire organization; may reach beyond organization; increased automation

INTEGRATING

3

Integrating smart grid deployments across the organization, realizing measurably improved performance

ENABLING

2

Investing based on clear strategy, implementing first projects to enable smart grid (may be compartmentalized)

INITIATING

1

Taking the first steps, exploring options, conducting experiments, developing smart grid vision

DEFAULT

0

Default level (status quo)

Eight SGMM Domains

SMR	Strategy, Mgmt & Regulatory <i>Vision, planning, governance, stakeholder collaboration</i>	TECH	Technology <i>IT architecture, standards, infrastructure, integration, tools</i>
OS	Organization and Structure <i>Culture, structure, training, communications, knowledge mgmt</i>	CUST	Customer <i>Pricing, customer participation & experience, advanced services</i>
GO	Grid Operations <i>Reliability, efficiency, security, safety, observability, control</i>	VCI	Value Chain Integration <i>Demand & supply management, leveraging market opportunities</i>
WAM	Work & Asset Management <i>Asset monitoring, tracking & maintenance, mobile workforce</i>	SE	Societal & Environmental <i>Responsibility, sustainability, critical infrastructure, efficiency</i>

SGMM

Smart Grid Maturity Model

V 1.1 Product Suite

www.sei.cmu.edu/smartgrid

Model

- Model Definition document
- Matrix

Compass Survey

- Compass survey yields maturity ratings and performance comparisons

Navigation Process

- Facilitated completion and interpretation of Compass, led by a certified “SGMM Navigator”

Training

- Overview Seminar
- SGMM Navigator Course

Licensing

- License organizations and certify individuals to deliver Navigation process



Compass Survey

Contains

- One question for each expected characteristic in the model and
- Demographic and performance questions

Example questions

Smart Grid Maturity Model: Matrix

Work and Asset Management (WAM)

asset monitoring, tracking and maintenance, mobile workforce

- 5 PIONEERING**
 - 1 The use of assets between and across supply chain participants is optimized with processes defined and executed across the supply chain.
 - 2 Assets are leveraged to maximize utilization, including just-in-time asset retirement, based on smart grid data and systems.
- 4 OPTIMIZING**
 - 1 A complete view of assets based on status, connectivity, and proximity is available to the organization.
 - 2 Asset models are based on real performance and monitoring data.
 - 3 Performance and usage of assets is optimized across the asset fleet and across asset classes.
 - 4 Service life for key grid components is managed through condition-based and predictive maintenance, and is based on real and current asset data.
- 3 INTEGRATING**
 - 1 Performance, trend analysis, and event audit data are available for
 - 2
 - 3
 - 4
 - 5 An integrated view of data and asset monitoring is in place.
 - 6 Asset inventory is being tracked using automation.
 - 7 Modeling of asset investments for key components is underway.

WAM-3.2 Condition-based maintenance programs for key components are in place.

WAM-3.2 For what percentage of key components have you implemented condition-based maintenance?

- | | |
|--------------------------|--------------|
| <input type="checkbox"/> | A. 0% |
| <input type="checkbox"/> | B. 1 - 25% |
| <input type="checkbox"/> | C. 26 - 50% |
| <input type="checkbox"/> | D. 51 - 75% |
| <input type="checkbox"/> | E. 76 - 100% |

- 2 ENABLING**
 - 1 An approach to track, inventory, and maintain event histories of assets is in development.
 - 2
 - 3
- 1 INITIATING**
 - 1
 - 2
 - 3 Assets are being evaluated for their potential alignment to the smart grid vision.

WAM-2.1 An approach for using smart grid capabilities to create inventories, maintain event histories, and track assets is in development.

WAM-2.1 Have you established an approach to track, inventory, and maintain event histories of assets using smart grid capabilities?

- | | |
|--------------------------|---|
| <input type="checkbox"/> | A. No |
| <input type="checkbox"/> | B. In documented plan including committed schedule and budget |
| <input type="checkbox"/> | C. In development |
| <input type="checkbox"/> | D. Being piloted |
| <input type="checkbox"/> | E. Completed |

Two ways to Complete SGMM Compass

1. SGMM Navigation

SGMM Navigator

- Leads utility stakeholders through defined process including two consensus-building workshops
- Helps utility stakeholders interpret and answer survey questions
- Analyzes and presents findings to help utility stakeholders reach consensus on SGMM aspirations
- Documents results and provides follow-on support

Expert-led

2. Self Assessment

Utility

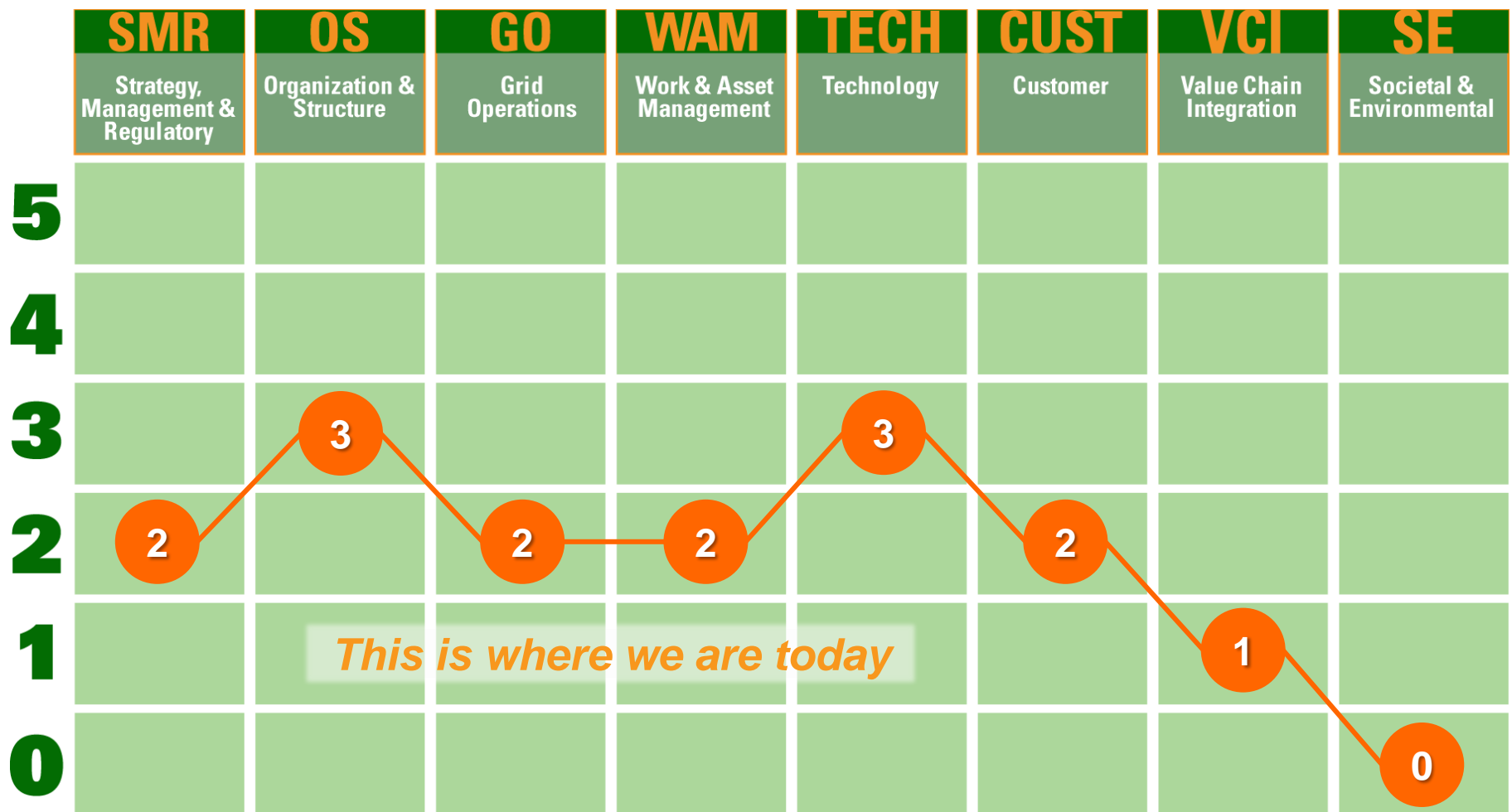
- Completes survey
- Submits survey for scoring
- Receives scoring report containing
 - Maturity rating by domain
 - Community statistics for comparison

Self-service



Compass Results: Maturity Profile

Both Navigation and self-assessment yield **current rating** by domain



Compass Results: Detailed Scores

Sample Results																
Level	Strategy, Management & Regulatory		Organization & Structure		Grid Operations		Work & Asset Management		Technology		Customer		Value Chain Integration		Societal & Environmental	
5		0.53		0.50		0.25		0.00		0.00		0.20		0.30		0.30
4		0.57		0.17		0.28		0.30		0.40		0.36		0.25		0.40
3		0.65		0.75		0.57		0.47		0.73		0.59		0.58		0.35
2		1.00		0.82		0.93		1.00		1.00		0.92		0.58		0.76
1		0.90		1.00		1.00		1.00		0.84		0.85		0.78		0.68
0		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00

Point Range

Meaning



≥ 0.70

Green reflects level compliance within the domain



≥ 0.40 and < 0.70

Yellow reflects significant progress



< 0.40

Red reflects initial progress

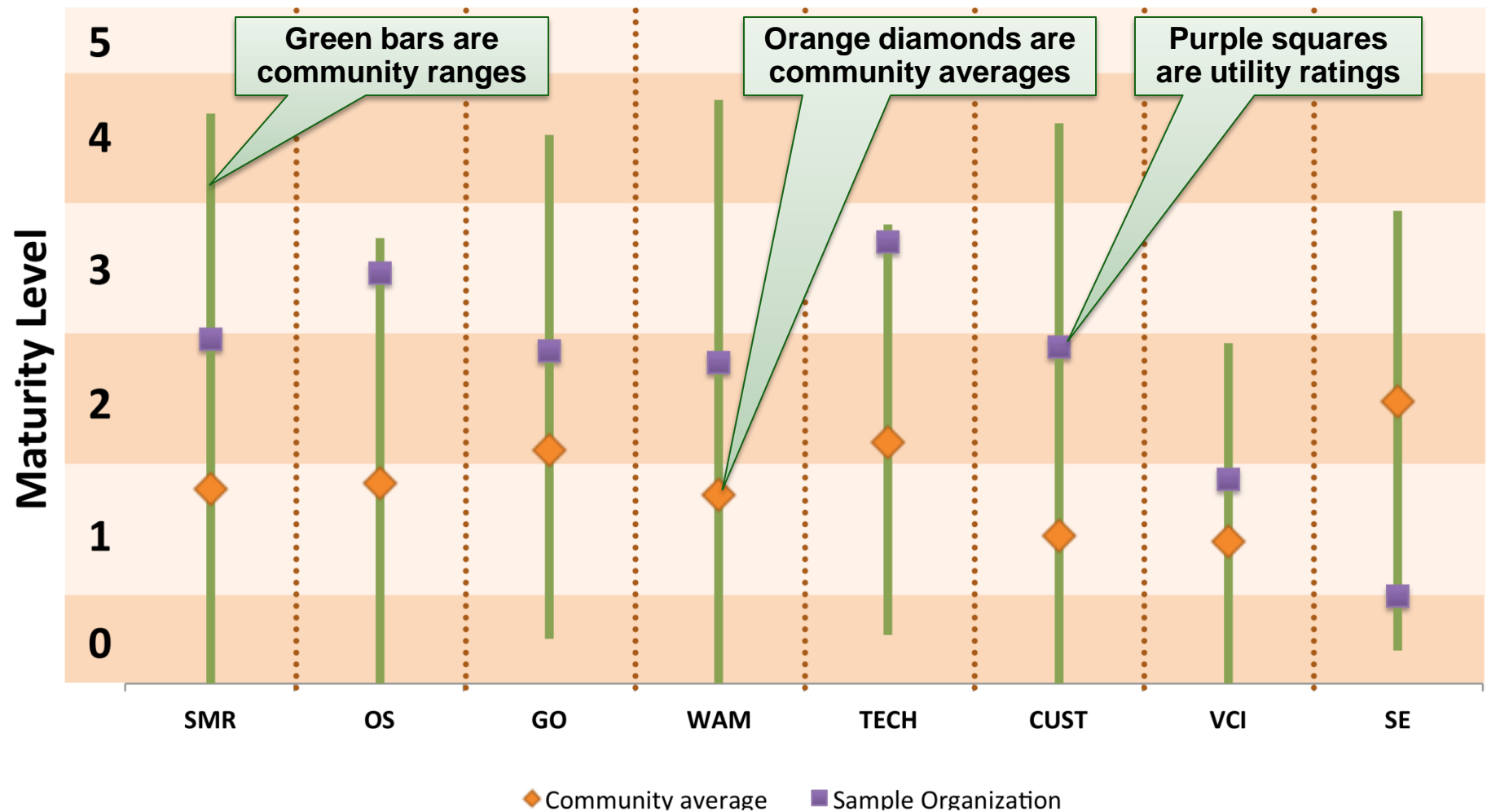


= 0

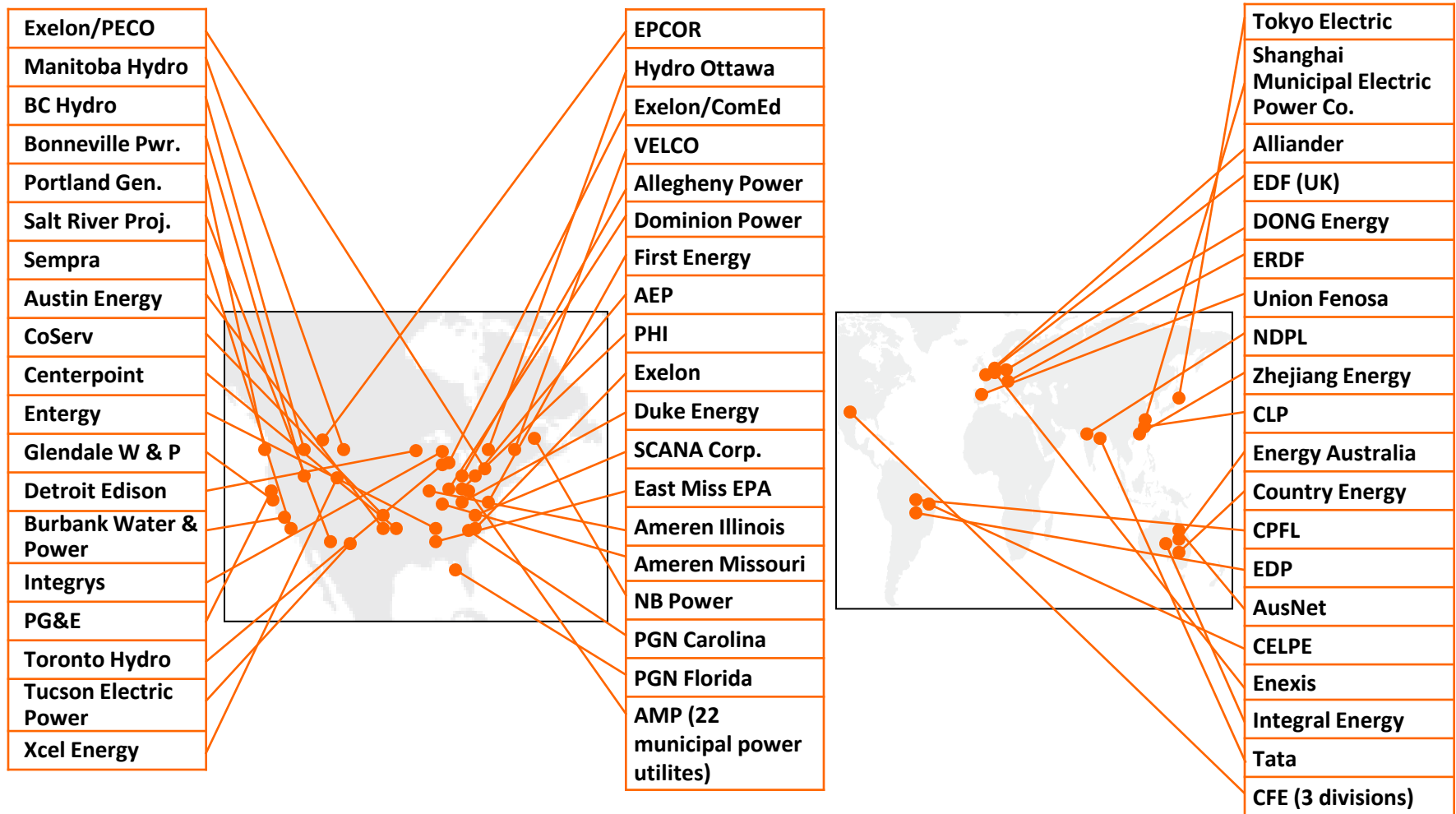
Grey reflects has not started

Compass Results: Community Data

Community ($\geq 250,000$ Meters) Comparison - Average and Range



SGMM User Community as of October 2010



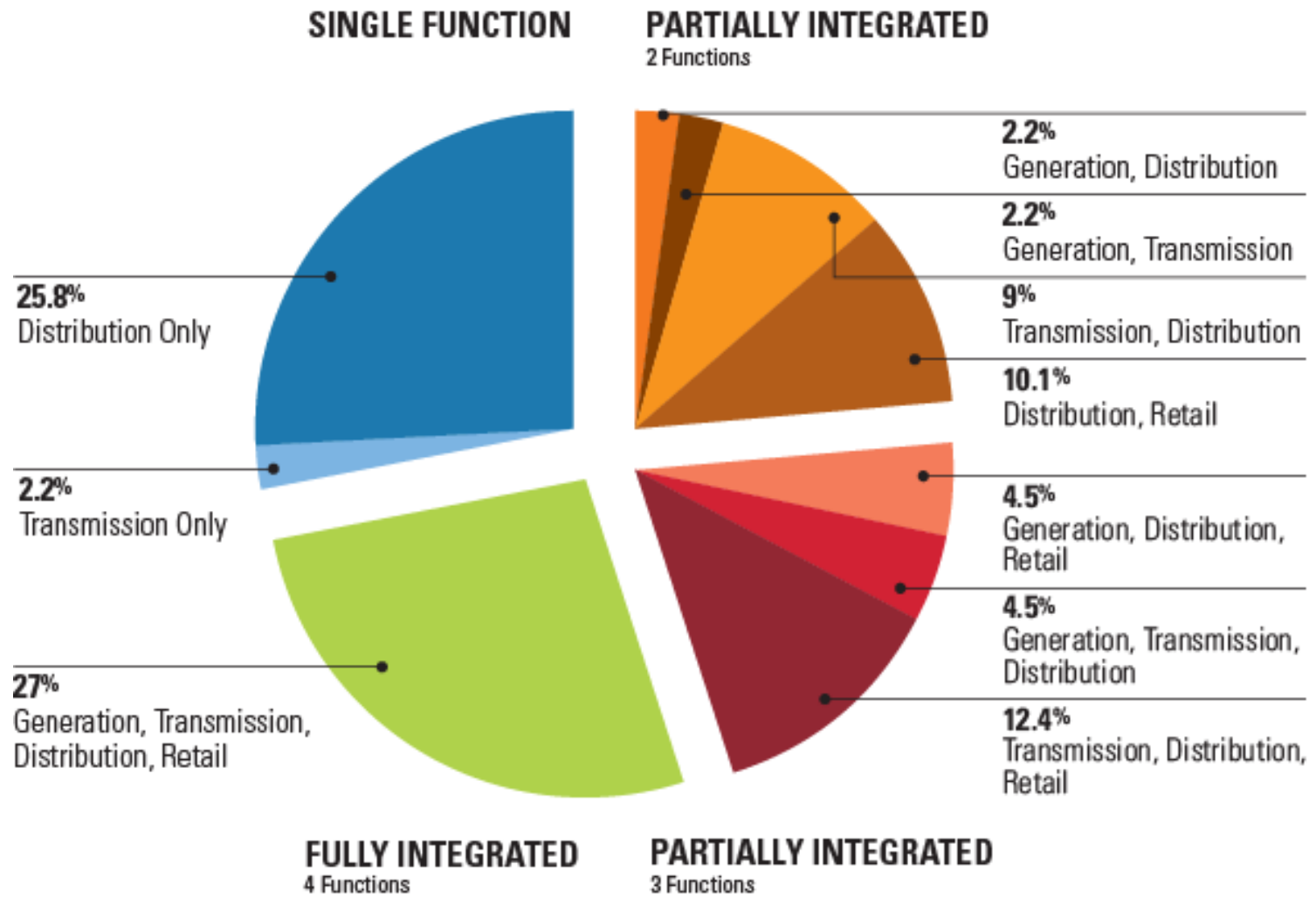
Polling Question #3

How important is grid modernization in your region?

- a) Extremely
- b) Somewhat
- c) Not very
- d) Not at all

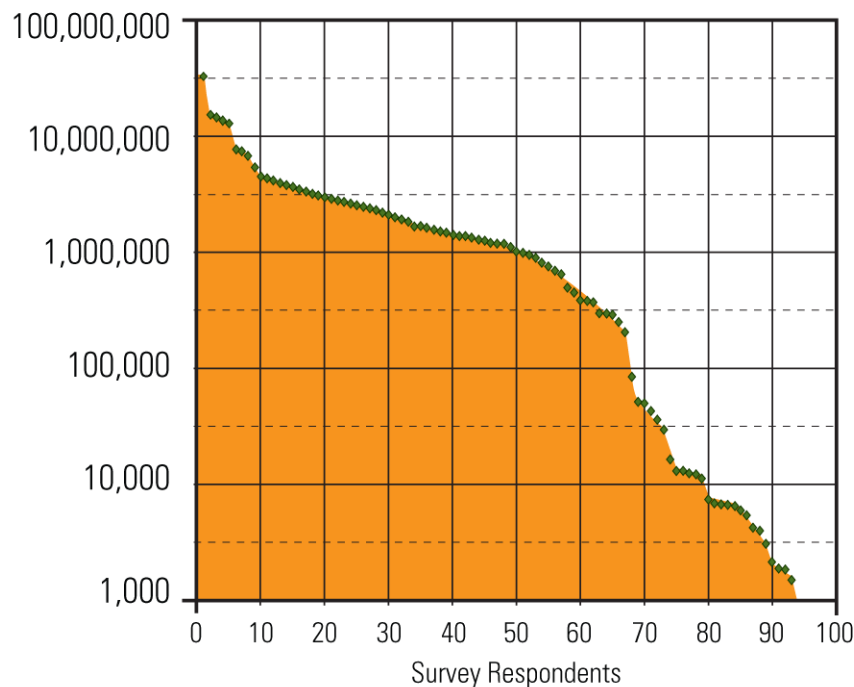


SGMM Community Data – Utility Type

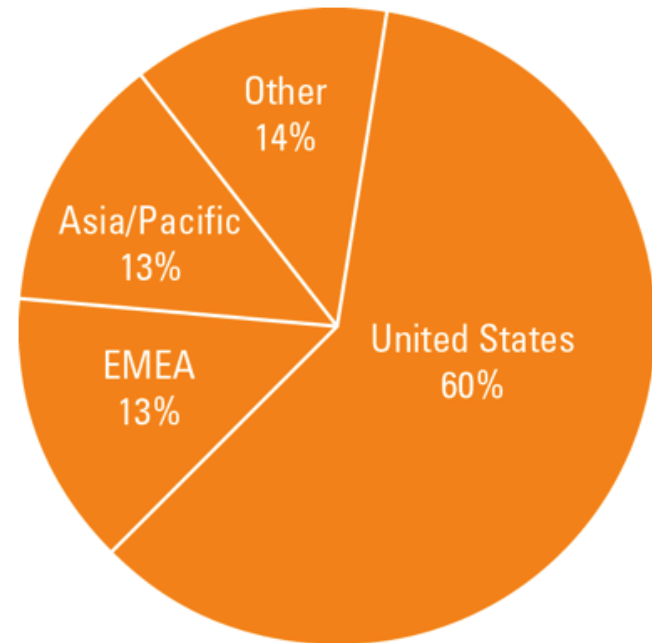


SGMM Community Data – Size and Location

Meter Count



Distribution by region



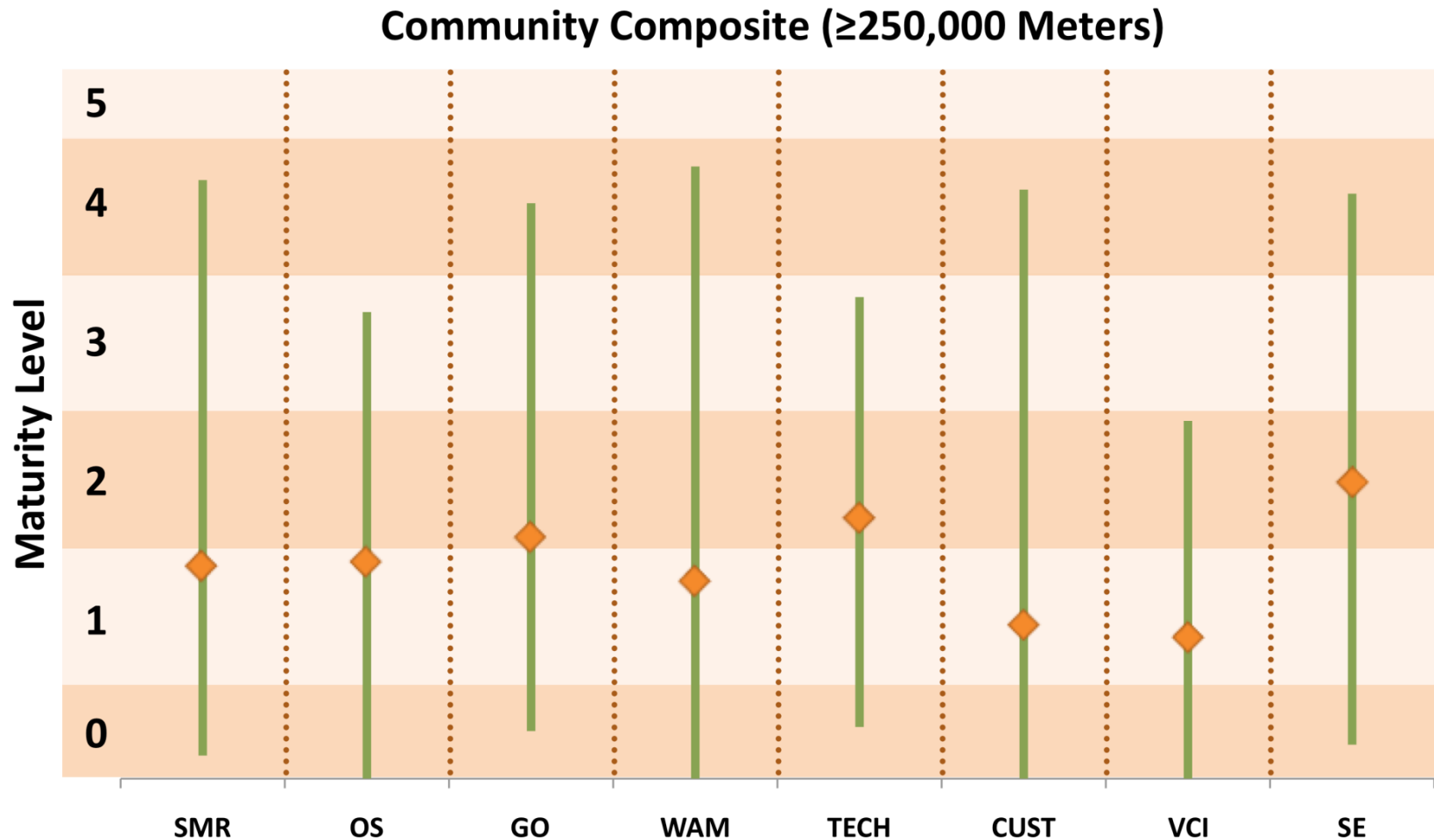
Polling Question #4

Where are you located?

- a) North America
- b) South or Central America
- c) Europe
- d) Middle East/Africa
- e) Asia/Pacific

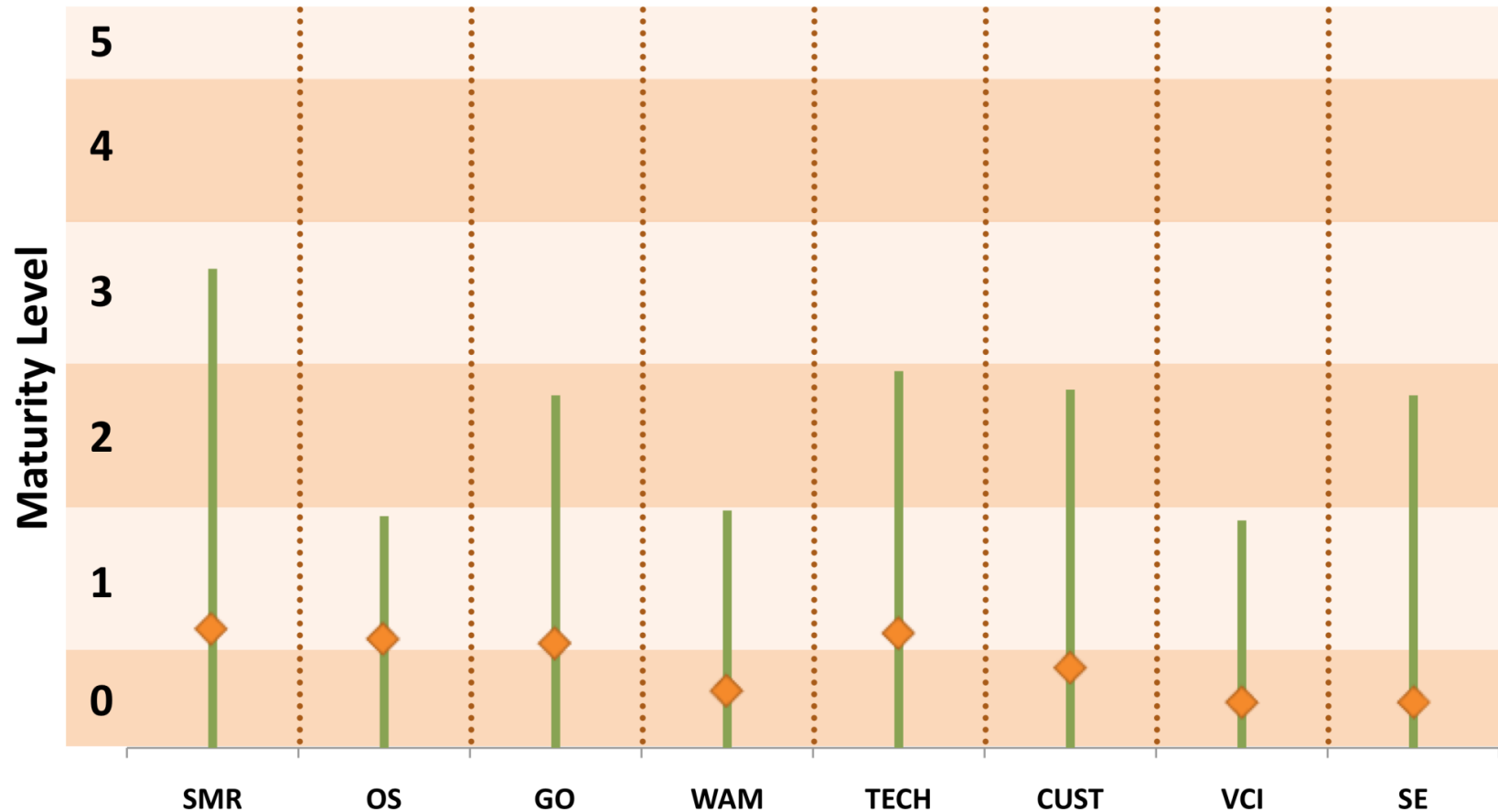


SGMM Community Data – Average and Range



SGMM Community Data – Average and Range

Community Composite (<250,000 Meters)



Navigation Process



A five-step process lead by a certified SGMM Navigator

1. Preparations are completed, first four Compass survey sections are completed
2. Survey Workshop: stakeholders from utility complete the Compass survey as a team, discussions occur to develop consensus on responses
3. Navigator analyzes results and prepares findings
4. Aspirations Workshop: Compass results and findings are presented and discussed; aspirations for planning horizon are agreed through consensus discussions
5. Actions are planned and documentation is completed to conclude the process

Community Comparison

Legend: + Top 10-30% ↓ Bottom 30% ★ Top 10%

*Example results
Fictitious organization*

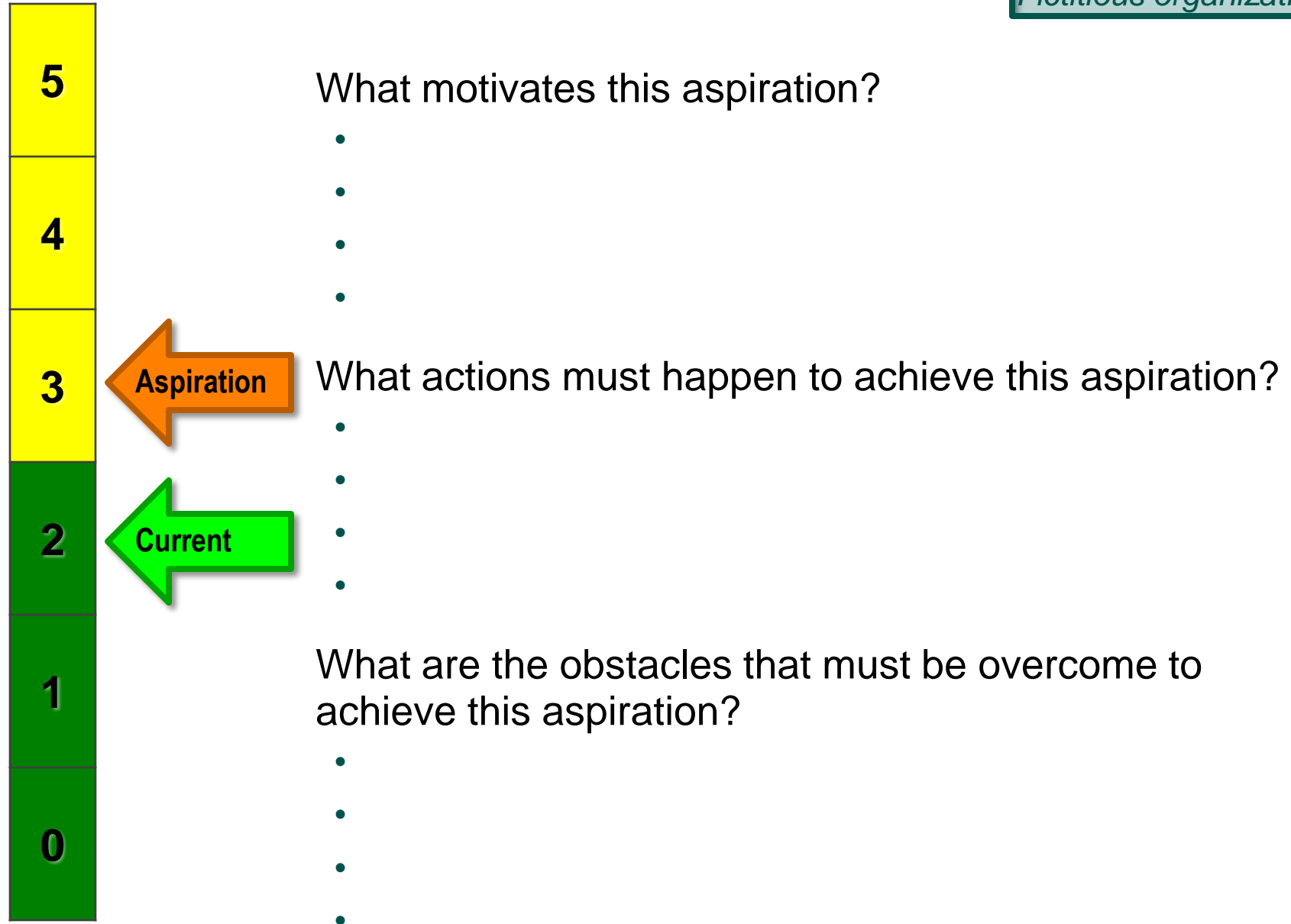
5	5.3 New business model opportunities emerge as a result of smart grid capabilities and are integrated into the organization's strategy.	
	5.2 Smart grid business activities provide sufficient financial resources to enable continued investment in smart grid sustainment and expansion.	
	5.1 Smart grid strategy capitalizes on smart grid as a foundation for the introduction of new services and product offerings.	
4	4.3 Smart grid strategy is shared and revised collaboratively with external stakeholders.	
	4.2 Smart grid is a core competency throughout the organization.	
	4.1 Smart grid vision and strategy drive the organization's strategy and direction.	
3	3.4 Required authorizations for smart grid investments have been secured.	
	3.3 Smart grid leaders view smart grid as an effective	
	3.2 A smart grid goal is implemented	
2	3.1 The smart grid vision is shared	
	+ 2.6 There is support and	
	2.5 There is collaborative	
	and strategy.	
	↓ 2.4 Budgets are established	
	2.3 Operational investments	
1	2.2 A common smart grid vision is accepted across the organization.	
	2.1 An initial smart grid strategy and a business plan are approved by management.	
	★ 1.3 Discussions have been held with regulators about the organization's smart grid vision.	
	1.2 Experimental implementations of smart grid concepts are supported.	
	1.1 Smart grid vision is developed with a goal of operational improvement.	

Aspiration setting:

1. Model characteristics are sequentially reviewed, discussed, and considered for levels that have not yet been achieved
2. Consensus on relevance and importance to organization for achieving characteristics is used to set aspiration

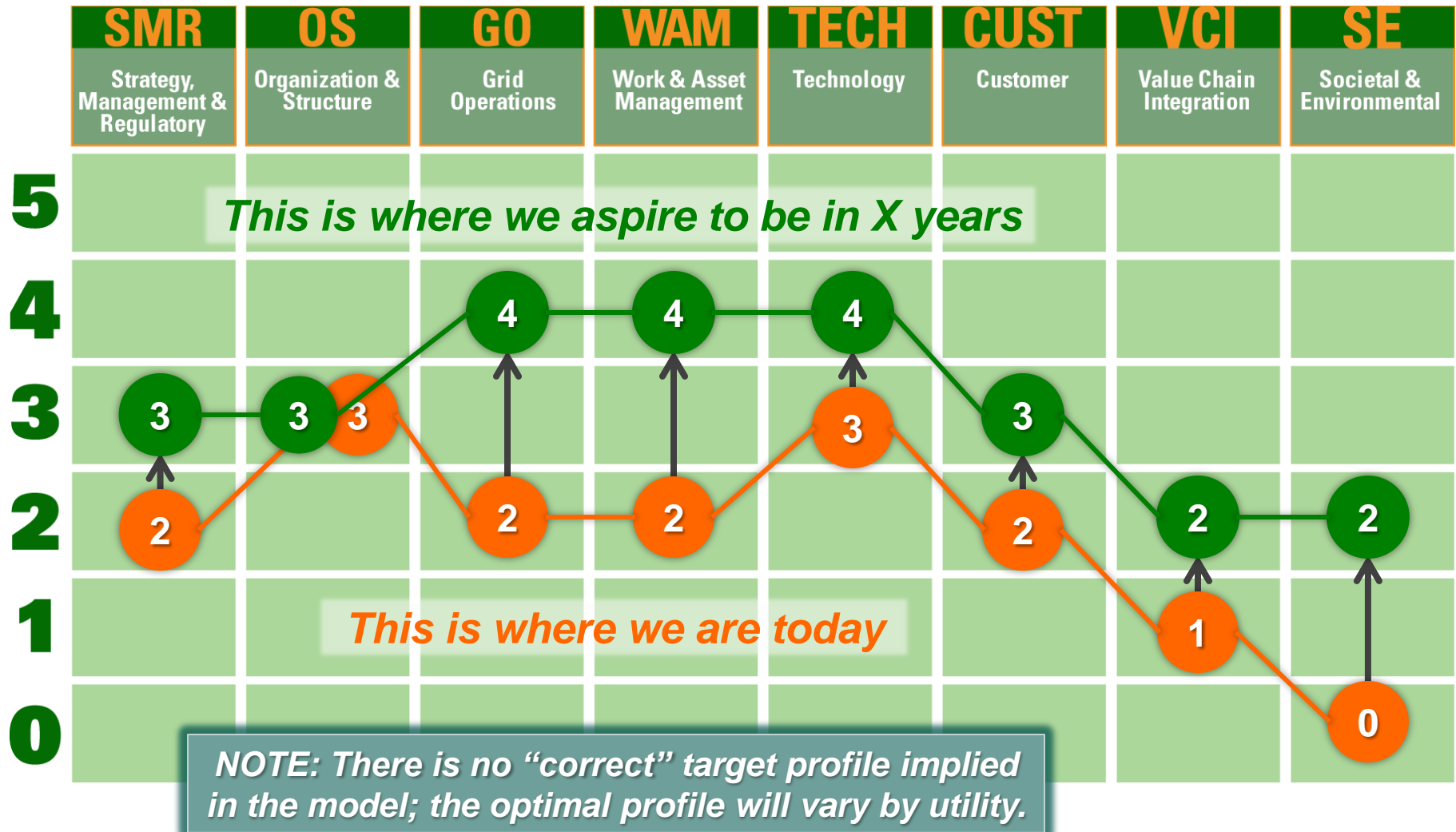
Aspiration Setting Tool

Strategy, Mgmt, & Regulatory



Setting Aspirations

Workshop 2 sets strategic aspirations by domain, for example:



Licensing and Certification

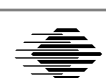
Licensed organizations are able to

- Offer SGMM Navigation as a service, which must be delivered by Certified SGMM Navigators
- Sponsor individuals to become Certified SGMM Navigators
- Participate in the ongoing evolution of the model

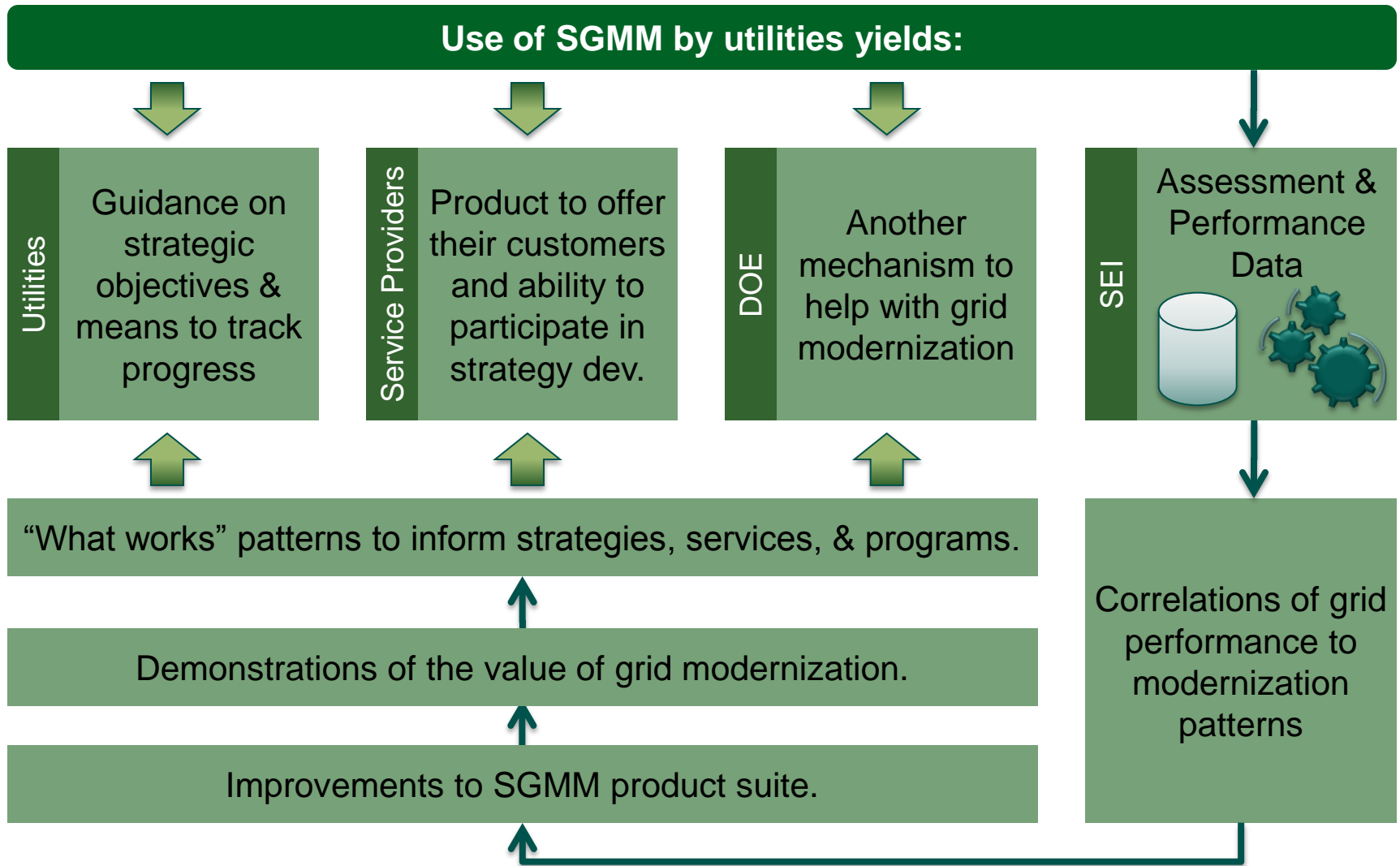
Certified SGMM Navigators are

- Trained and certified by SEI: 3-day course, exam, and reviewed first delivery
- Recognized as SGMM and industry experts
- Equipped with turn-key materials to lead SGMM Navigation process including detailed process scripts, checklists, and templates
- Provided with regular updates from and special access to model team

SGMM licensing and certification program is currently in pilot phase



SGMM Benefits – A Community View



Polling Question #5

I work for:

- a) An electric utility
- b) A service provider or vendor to electric utilities
- c) A government organization
- d) Other



Next Steps to Consider

Complete the post webinar survey

This will automatically present when you exit the webinar.

Complete a self-assessment

Email info@sei.cmu.edu and request instructions for SGMM self-assessment.

Learn more about the model

Follow links on the post webinar resource web page.

Learn more about the SGMM Navigator certification process

Complete the inquiry form on the post webinar resource web page.

Find a licensed organization to lead a SGMM Navigation

www.sei.cmu.edu/partners/directory/organization/

Select “Smart Grid Maturity Model” in the “Service” pull-down.

Learn about the SGMM licensing program

Email info@sei.cmu.edu and request information about the SGMM licensing program.

For all other inquiries, please email info@sei.cmu.edu



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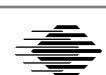


The Software Engineering Institute

SEI is a federally funded research and development center based at Carnegie Mellon University, a global research university recognized worldwide for its energy and environmental research initiatives.

A trusted, objective source of best practices, methods and tools to organizations worldwide, SEI is a global leader in software and systems engineering, process improvement and security best practices – all critical elements of smart grid success.

SEI collaborates in public-private partnership with government and industry on important cyber security, architecture and interoperability challenges of the smart grid.



SEI's Role as Steward of the SGMM

Provide **governance** working with multiple stakeholders

Enable **widespread availability**, adoption, and use of the model for the benefit of the community

Evolve the model based on stakeholder needs, market developments, user feedback, and interactions with domain experts

Develop **transition** mechanisms—education, training, awareness, research collaboration—to support the model

Grow the SGMM **community** of users worldwide

